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10/070,277

L2: Entry 1 of 9

File: PGPB

Jun 10, 2004

DOCUMENT-IDENTIFIER: US 20040111769 A1

TITLE: Sugar beet genes involved in stress tolerance

CLAIMS:

8. A method for enhancing stress tolerance in a plant comprising the expression or altering the expression of a nucleic acid encoding a dihydroorotase in cells, tissues or parts of said plant.

9. A method according to claim 8 wherein said nucleic acid encodes a dihydroorotase as defined in claim 4, or a homologue, an orthologue or a paralogue thereof.

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

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Search Results - Record(s) 1 through 9 of 9 returned.

1. Document ID: US 20040111769 A1

Using default format because multiple data bases are involved.

L2: Entry 1 of 9

File: PGPB

Jun 10, 2004

PGPUB-DOCUMENT-NUMBER: 20040111769
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040111769 A1

TITLE: Sugar beet genes involved in stress tolerance

PUBLICATION-DATE: June 10, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Kanhonou, Arthur Rodolphe	Valencia		ES	
Serrano Salom, Ramon	Valencia		ES	
Ros Palau, Roc	Valencia		ES	

US-CL-CURRENT: 800/289; 435/6

[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#) [Sequences](#) [Attachments](#) [Claims](#) [KINIC](#) [Drawn D](#)

2. Document ID: US 20030049686 A1

L2: Entry 2 of 9

File: PGPB

Mar 13, 2003

PGPUB-DOCUMENT-NUMBER: 20030049686
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030049686 A1

TITLE: Method for manufacturing mutnat library of proteins with various sizes and sequences

PUBLICATION-DATE: March 13, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Kim, Hak-Sung	Taejon		KR	
Kim, Geun-Joong	Suwon		KR	
Cheon, Young-Hoon	Taejon		KR	
Lee, Dong-Eun	Taejon		KR	

US-CL-CURRENT: 435/7.1; 435/252.3, 435/69.1, 435/91.2, 530/350

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Drawn D
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3. Document ID: US 20020102583 A1

L2: Entry 3 of 9

File: PGPB

Aug 1, 2002

PGPUB-DOCUMENT-NUMBER: 20020102583

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020102583 A1

TITLE: Method for isolation of extrachromosomal amplified genes

PUBLICATION-DATE: August 1, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Wahl, Geoffrey M.	San Diego	CA	US	
Shimizu, Noriaki	San Diego	CA	US	

US-CL-CURRENT: 435/6; 435/91.1, 435/91.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Drawn D
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4. Document ID: US 6537758 B2

L2: Entry 4 of 9

File: USPT

Mar 25, 2003

US-PAT-NO: 6537758

DOCUMENT-IDENTIFIER: US 6537758 B2

TITLE: Method for isolating nucleic acid from micronuclei separated from a cell

DATE-ISSUED: March 25, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wahl, Geoffrey M.	San Diego	CA		
Shimizu, Noriaki	San Diego	CA		

US-CL-CURRENT: 435/6; 536/25.4

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Drawn D
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5. Document ID: US 6312908 B1

L2: Entry 5 of 9

File: USPT

Nov 6, 2001

US-PAT-NO: 6312908
DOCUMENT-IDENTIFIER: US 6312908 B1

TITLE: Method for isolation of extrachromosomal amplified genes

DATE-ISSUED: November 6, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wahl; Geoffrey M.	San Diego	CA		
Shimizu; Noriaki	San Diego	CA		

US-CL-CURRENT: 435/6; 435/91.1, 435/91.2, 536/25.4, 536/25.41

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Text Search](#) | [Advanced Search](#) | [Claims](#) | [KWMC](#) | [Drawn D](#)

6. Document ID: US 6033849 A

L2: Entry 6 of 9

File: USPT

Mar 7, 2000

US-PAT-NO: 6033849

DOCUMENT-IDENTIFIER: US 6033849 A

TITLE: Method for isolation of extrachromosomal amplified genes

DATE-ISSUED: March 7, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wahl; Geoffrey M.	San Diego	CA		
Shimizu; Noriaki	San Diego	CA		

US-CL-CURRENT: 435/6; 435/91.2

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Text Search](#) | [Advanced Search](#) | [Claims](#) | [KWMC](#) | [Drawn D](#)

7. Document ID: US 5981182 A

L2: Entry 7 of 9

File: USPT

Nov 9, 1999

US-PAT-NO: 5981182

DOCUMENT-IDENTIFIER: US 5981182 A

TITLE: Vector constructs for the selection and identification of open reading frames

DATE-ISSUED: November 9, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Jacobs, Jr.; William R.	City Island	NY
Daugelat; Sabine	Bronx	NY

US-CL-CURRENT: 435/6; 435/320.1, 435/69.1, 536/23.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Searcher	Editor	Processor	Claims	KWIC	Drawn	Def
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8. Document ID: US 5968502 A

L2: Entry 8 of 9

File: USPT

Oct 19, 1999

US-PAT-NO: 5968502

DOCUMENT-IDENTIFIER: US 5968502 A

TITLE: Protein production and protein delivery

DATE-ISSUED: October 19, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Treco; Douglas	Arlington	MA		
Heartlein; Michael W.	Boxborough	MA		
Selden; Richard F	Wellesley	MA		

US-CL-CURRENT: 424/93.21; 424/425, 435/320.1, 435/325, 435/455, 435/69.1, 536/23.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Searcher	Editor	Processor	Claims	KWIC	Drawn	Def
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9. Document ID: US 5213972 A

L2: Entry 9 of 9

File: USPT

May 25, 1993

US-PAT-NO: 5213972

DOCUMENT-IDENTIFIER: US 5213972 A

TITLE: Fermentation process for the production of pyrimidine deoxyribonucleosides

DATE-ISSUED: May 25, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
McCandliss; Russell J.	Gaithersburg	MD		
Anderson; David M.	Rockville	MD		

US-CL-CURRENT: 435/89; 435/252.3, 435/252.33, 435/320.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Searcher	Editor	Processor	Claims	KWIC	Drawn	Def
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Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
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Terms	Documents
dihydroorotate.clm.	9

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[Previous Page](#) [Next Page](#) [Go to Doc#](#)

[First Hit](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#) [Generate Collection](#) [Print](#)

L2: Entry 3 of 22

File: PGPB

Sep 4, 2003

DOCUMENT-IDENTIFIER: US 20030166615 A1

TITLE: Protein kinase and phosphatase inhibitors and methods for designing them

Detail Description Paragraph:

[0077] The next class of M.sub.1 functionality which was explored was the boronic acid group. This functional group is an intriguing candidate for M.sub.1 for a number of reasons: 1) It can exist in a non-ionic state so that it should not prevent passive absorption of non-peptide inhibitors across cell membranes. 2) The planar, trigonal, boron acids might form reversible tetrahedral covalent borate complexes (a well known property of boronic acids, see Loomis & Durst, 1992) through their vacant 2p orbitals with anions present in the protein kinase active site, such as the catalytic Asp carboxyl group, or the ATP/ADP terminal phosphate oxygens. This ability to form borate complexes with active site nucleophiles has been extensively utilized to develop slow binding inhibitors of serine proteases (e.g. see Kettner & Shenvi, 1984), wherein the nucleophilic serine OH forms a covalent bond with the vacant 2p orbital in the boronic acid resulting in a tetrahedral borate complex (e.g. see Skordalakes et al., 1997). Also, an intramolecular complex of a boronic acid with a urea NH.sub.2 was used to prepare transition state analogs inhibitors of dihydroorotate (Kinder et al., 1990). 3) Boronic acids act as Lewis acids and are converted to tetrahedral hydrates in water by forming borate complexes with water or hydroxide ions. Therefore, it is also possible that these boronic acid hydrates may function as phosphate mimics and M.sub.1 modules as proposed in FIG. 2. This hydration property was utilized by Baggio et al. (1997) wherein a hydrated boronic acid functioned as a transition state analog inhibitor functionality for arginase. These researchers evaluated the inhibited complex by x-ray and showed that the hydrated boronic acid functionality formed two hydrogen bonds with the active site catalytic Glu-277 carboxyl side chain and one of the other hydrated boronic acid OH's interacted with two catalytic Mn.sup.2+'s in the active site. These binding interactions are closely analogous to those proposed in protein kinase active sites, i.e. H-bonds to the catalytic Asp side chain carboxyl group and interactions with the active site Mg.sup.2+'s (see FIGS. 2 and 4). The use of boronic acids for protein kinase inhibitors has not been explored previously.

[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

Hit List

Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs
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Search Results - Record(s) 1 through 10 of 22 returned.

1. Document ID: US 20040191783 A1

Using default format because multiple data bases are involved.

L2: Entry 1 of 22

File: PGPB

Sep 30, 2004

PGPUB-DOCUMENT-NUMBER: 20040191783

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040191783 A1

TITLE: Low density micro-array analysis in human breast cancer

PUBLICATION-DATE: September 30, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Leclercq, Guy	Bruxelles		BE	
Remacle, Jose	Malonne		BE	
Lacroix, Marc	Baelen		BE	
Zammatteo, Nathalie	Gelbressee		BE	
de Longueville, Francoise	Natoye		BE	

US-CL-CURRENT: 435/6; 435/287.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KOMC	Drawn De
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2. Document ID: US 20040033596 A1

L2: Entry 2 of 22

File: PGPB

Feb 19, 2004

PGPUB-DOCUMENT-NUMBER: 20040033596

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040033596 A1

TITLE: In vitro mutagenesis, phenotyping, and gene mapping

PUBLICATION-DATE: February 19, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Threadgill, David W.	Chapel Hill	NC	US	
Lee, Daekee	Chapel Hill	NC	US	

US-CL-CURRENT: 435/325; 435/366, 435/419

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Drawn De
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 3. Document ID: US 20030166615 A1

L2: Entry 3 of 22

File: PGPB

Sep 4, 2003

PGPUB-DOCUMENT-NUMBER: 20030166615

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030166615 A1

TITLE: Protein kinase and phosphatase inhibitors and methods for designing them

PUBLICATION-DATE: September 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hangauer, David G. JR.	Amherst	NY	US	
El-Araby, Moustafa E.	Plainsboro	NJ	US	
Milkiewicz, Karen L.	Exton	PA	US	

US-CL-CURRENT: 514/80; 514/233.5, 514/254.09, 514/307, 514/419, 544/143, 544/373,
546/146, 546/23, 548/414, 548/494

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Drawn De
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 4. Document ID: US 20030166201 A1

L2: Entry 4 of 22

File: PGPB

Sep 4, 2003

PGPUB-DOCUMENT-NUMBER: 20030166201

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030166201 A1

TITLE: Selection systems for genetically modified cells

PUBLICATION-DATE: September 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Jensen, Michael C.	Pasadena	CA	US	

US-CL-CURRENT: 435/191; 435/320.1, 435/325, 435/69.1, 514/44, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Drawn De
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 5. Document ID: US 20030148311 A1

L2: Entry 5 of 22

File: PGPB

Aug 7, 2003

PGPUB-DOCUMENT-NUMBER: 20030148311
 PGPUB-FILING-TYPE: new
 DOCUMENT-IDENTIFIER: US 20030148311 A1

TITLE: Aspartate carbamyltransferase as herbicidal target

PUBLICATION-DATE: August 7, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Ehrhardt, Thomas	Speyer		DE	
Lerchl, Jens	Ladenburg		DE	
Nigel, Marc Stitt	Edingen-Neckarhausen		DE	
Zrenner, Rita	Ladenburg		DE	
Ritter, Tina Maria	Dilsberg		DE	

US-CL-CURRENT: 435/6; 435/15, 435/193

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [Claims](#) | [KMC](#) | [Drawn D](#)

6. Document ID: US 20020058244 A1

L2: Entry 6 of 22

File: PGPB

May 16, 2002

PGPUB-DOCUMENT-NUMBER: 20020058244
 PGPUB-FILING-TYPE: new
 DOCUMENT-IDENTIFIER: US 20020058244 A1

TITLE: Method for detecting uracil biosynthesis inhibitors and their use as herbicides

PUBLICATION-DATE: May 16, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Pedersen, Marianne K.	Princeton Junction	NJ	US	
Birk, Iwona T.	Raleigh	NC	US	
Orth, Ann B.	Langhorne	PA	US	
Singh, Bijay K.	Apex	NC	US	
Tecle, Berhane	Lawrenceville	NJ	US	
Kameswaran, Venkataraman	Pennington	NJ	US	
Szucs, Stephen S.	Lawrenceville	NJ	US	

US-CL-CURRENT: 435/4; 504/116.1, 504/282, 548/370.1

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Sequences](#) | [Attachments](#) | [Claims](#) | [KMC](#) | [Drawn D](#)

7. Document ID: US 6825169 B1

L2: Entry 7 of 22

File: USPT

Nov 30, 2004

US-PAT-NO: 6825169

DOCUMENT-IDENTIFIER: US 6825169 B1

TITLE: Inhibitors of dipeptidyl-aminopeptidase type IV

DATE-ISSUED: November 30, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bachovchin; William W.	Melrose	MA		
Plaut; Andrew G.	Boston	MA		
Flentke; George R.	Boston	MA		

US-CL-CURRENT: 514/19, 514/15, 514/16, 514/17, 514/18, 530/327, 530/328, 530/329,
530/330, 530/331, 568/1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Image	Text	Claims	KWMC	Drawn D.
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 8. Document ID: US 6770628 B2

L2: Entry 8 of 22

File: USPT

Aug 3, 2004

US-PAT-NO: 6770628

DOCUMENT-IDENTIFIER: US 6770628 B2

** See image for Certificate of Correction **

TITLE: Hematopoietic stimulation

DATE-ISSUED: August 3, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wallner; Barbara P.	Weston	MA		
Jones; Barry	Cambridge	MA		
Miller; Glenn T.	Haverhill	MA		
Adams; Sharlene	Watertown	MA		

US-CL-CURRENT: 514/19, 514/13, 514/14, 514/15, 514/16, 514/17, 514/18, 514/423

Full	Title	Citation	Front	Review	Classification	Date	Reference	Image	Text	Claims	KWMC	Drawn D.
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 9. Document ID: US 6703238 B2

L2: Entry 9 of 22

File: USPT

Mar 9, 2004

US-PAT-NO: 6703238

DOCUMENT-IDENTIFIER: US 6703238 B2

TITLE: Methods for expanding antigen-specific T cells

DATE-ISSUED: March 9, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bachovchin; William	Melrose	MA		
Wallner; Barbara	Weston	MA		

US-CL-CURRENT: 435/325; 424/184.1, 424/195.11, 435/377, 435/383, 514/2

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Print](#) | [Fwd Refs](#) | [Bkwd Refs](#) | [Generate OACS](#) | [Claims](#) | [KWMC](#) | [Drawn](#) | [Def](#)

10. Document ID: US 6692753 B2

L2: Entry 10 of 22

File: USPT

Feb 17, 2004

US-PAT-NO: 6692753

DOCUMENT-IDENTIFIER: US 6692753 B2

TITLE: Potentiation of the immune response

DATE-ISSUED: February 17, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Huber; Brigitte T.	Boston	MA		
Schmitz; Tracy	Cambridge	MA		
Underwood; Robert	Quincy	MA		

US-CL-CURRENT: 424/278.1; 514/18, 514/2, 514/408

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Print](#) | [Fwd Refs](#) | [Bkwd Refs](#) | [Generate OACS](#) | [Claims](#) | [KWMC](#) | [Drawn](#) | [Def](#)

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Terms	Documents
dihydroorotate same inhibitor?	22

Display Format: [Change Format](#)

[Previous Page](#) [Next Page](#) [Go to Doc#](#)

WEST Search History

DATE: Wednesday, February 16, 2005

<u>Hide?</u>	<u>Set Name</u>	<u>Query</u>	<u>Hit Count</u>
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ</i>			
<input type="checkbox"/>	L3	dihydroorotase same inhibitor?.clm.	0
<input type="checkbox"/>	L2	dihydroorotase same inhibitor?	22
<input type="checkbox"/>	L1	dihydroorotase and inhibitor?	322

END OF SEARCH HISTORY

WEST Search History

DATE: Wednesday, February 16, 2005

<u>Hide?</u>	<u>Set Name</u>	<u>Query</u>	<u>Hit Count</u>
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ</i>			
<input type="checkbox"/>	L12	L11 and (potato? or solanum)	0
<input type="checkbox"/>	L11	dihydroorotase and dna	22
<input type="checkbox"/>	L10	dihydroorotase same dna	1
<input type="checkbox"/>	L9	dihydroorotase with dna	0
<input type="checkbox"/>	L8	dihydroorotase with solanum	0
<input type="checkbox"/>	L7	dihydroorotase same solanum	0
<input type="checkbox"/>	L6	solanum	5249
<input type="checkbox"/>	L5	L3 and solanum	0
<input type="checkbox"/>	L4	L3 and potatoes	0
<input type="checkbox"/>	L3	dihydroorotase	25
<input type="checkbox"/>	L2	dihydroorotase and solanum	0
<input type="checkbox"/>	L1	dihydroorotase.clm.	2

END OF SEARCH HISTORY

WEST Search History

DATE: Wednesday, February 16, 2005

<u>Hide?</u>	<u>Set Name</u>	<u>Query</u>	<u>Hit Count</u>
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<input type="checkbox"/>	L5	dihydroorotate same solanum	0
<input type="checkbox"/>	L4	dihydroorotate with solanum	0
<input type="checkbox"/>	L3	dihydroorotate and solanum	15
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<input type="checkbox"/>	L1	dihydroorotate same solanum	0

END OF SEARCH HISTORY

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COST IN U.S. DOLLARS                               SINCE FILE      TOTAL
                                                ENTRY      SESSION
'FULL ESTIMATED COST'                           0.42        0.42
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=> s Inhibitor? and Dihydroorotase
L1          273 INHIBITOR? AND DIHYDROOROTASE
```

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=> dup rem l1
PROCESSING COMPLETED FOR L1
L2          146 DUP REM L1 (127 DUPLICATES REMOVED)
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=> s l2 and (plant? or solanum or arbidopsis or tobacco or wheat)
L3          3 L2 AND (PLANT? OR SOLANUM OR ARBIDOPSIS OR TOBACCO OR WHEAT)
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=> d l3 1-3 ibib ab

L3 ANSWER 1 OF 3 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2000:592846 HCPLUS
 DOCUMENT NUMBER: 133:173007
 TITLE: Non-targeted activation of endogenous gene expression
 or over-expression by recombination methods in situ
 INVENTOR(S): Harrington, John J.; Sherf, Bruce; Rundlett, Stephen
 PATENT ASSIGNEE(S): Athersys, Inc., USA
 SOURCE: PCT Int. Appl., 241 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000049162	A2	20000824	WO 2000-US4429	20000222
WO 2000049162	A3	20001228		
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6602686	B1	20030805	US 1999-455659	19991207
US 6410266	B1	20020625	US 2000-479122	20000107

US 6670185	B1	20031230	US 2000-479123	20000107
US 6361972	B1	20020326	US 2000-481375	20000110
US 6541221	B1	20030401	US 2000-481282	20000111
US 6524824	B1	20030225	US 2000-481355	20000112
US 6524818	B1	20030225	US 2000-484997	20000118
US 6623958	B1	20030923	US 2000-484996	20000118
US 6740503	B1	20040525	US 2000-484317	20000118
CA 2364267	AA	20000824	CA 2000-2364267	20000222
EP 1155131	A2	20011121	EP 2000-908750	20000222

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO

BR 2000008313	A	20030923	BR 2000-8313	20000222
JP 2004501601	T2	20040122	JP 2000-599886	20000222
US 2004162416	A1	20040819	US 2001-760897	20010117
ZA 2001006777	A	20030514	ZA 2001-6777	20010816
US 2003180267	A1	20030925	US 2002-331329	20021230

PRIORITY APPLN. INFO.:

US 1999-253022	A	19990219
US 1999-263814	A	19990308
US 1999-276820	A	19990326
US 1997-941223	B2	19970926
US 1998-159643	B2	19980924
WO 2000-US4429	W	20000222
US 2000-515124	B1	20000227

AB The present invention is directed generally to activating gene expression or causing over-expression of a gene by recombination methods in situ. The invention also is directed generally to methods for expressing an endogenous gene in a cell at levels higher than those normally found in the cell. In one embodiment of the invention, expression of an endogenous gene is activated or increased following integration into the cell, by non-homologous or illegitimate recombination, of a regulatory sequence that activates expression of the gene. In another embodiment, the expression of the endogenous gene may be further increased by co-integration of one or more amplifiable markers, and selecting for increased copies of the one or more amplifiable markers located on the integrated vector. In another embodiment, the invention is directed to activation of endogenous genes by non-targeted integration of specialized activation vectors, which are provided by the invention, into the genome of a host cell. The invention also provides methods for the identification, activation, isolation, and/or expression of genes undiscoverable by current methods since no target sequence is necessary for integration. The invention also provides methods for isolation of nucleic acid mols. (particularly cDNA mols.) encoding a variety of proteins, including transmembrane proteins, and for isolation of cells expressing such transmembrane proteins which may be heterologous transmembrane proteins. The invention also is directed to isolated genes, gene products, nucleic acid mols., to compns. comprising such genes, gene products and nucleic acid mols., and to vectors and host cells comprising such genes and nucleic acid mols., that may be used in a variety of therapeutic and diagnostic applications. Thus, by the present invention, endogenous genes, including those assocd. with human disease and development, may be activated and isolated without prior knowledge of the sequence, structure, function, or expression profile of the genes.

L3 ANSWER 2 OF 3 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:748948 HCPLUS

DOCUMENT NUMBER: 128:150233

TITLE: The complete genome sequence of the gram-positive bacterium *Bacillus subtilis*

AUTHOR(S): Kunst, F.; Ogasawara, N.; Moszer, I.; Albertini, A. M.; Alloni, G.; Azevedo, V.; Bertero, M. G.; Bessieres, P.; Bolotin, A.; Borchert, S.; Borriss, R.; Boursier, L.; Brans, A.; Braun, M.; Brignell, S. C.; Bron, S.; Brouillet, S.; Bruschi, C. V.; Caldwell, B.; Capuano, V.; Carter, N. M.; Choi, S.-K.; Codani, J.-J.; Connerton, I. F.; Cummings, N. J.; Daniel, R.

A.; Denizot, F.; Devine, K. M.; Dusterhoft, A.; Ehrlich, S. D.; Emmerson, P. T.; Entian, K. D.; Errington, J.; Fabret, C.; Ferrari, E.; Foulger, D.; Fritz, C.; Fujita, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Galleron, N.; Ghim, S.-Y.; Glaser, P.; Goffeau, A.; Golightly, E. J.; Grandi, G.; Guiseppi, G.; Guy, B. J.; Haga, K.; et al.

CORPORATE SOURCE: Unite de Biochemie Microbienne, Inst. Pasteur, Paris, 75724, Fr.

SOURCE: Nature (London) (1997), 390(6657), 249-256
CODEN: NATUAS; ISSN: 0028-0836

PUBLISHER: Macmillan Magazines

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Bacillus subtilis is the best-characterized member of the gram-pos. bacteria. Its genome of 4,214,810 base pairs comprises 4100 protein-coding genes. Of these protein-coding genes, 53% are represented once, while a quarter of the genome corresponds to several gene families that have been greatly expanded by gene duplication, the largest family contg. 77 putative ATP-binding transport proteins. In addn., a large proportion of the genetic capacity is devoted to the utilization of a variety of carbon sources, including many plant-derived mols. The identification of 5 signal peptidase genes, as well as several genes for components of the secretion app., is important given the capacity of Bacillus strains to secrete large amts. of industrially important enzymes. Many of the genes are involved in the synthesis of secondary metabolites, including antibiotics, that are more typically assocd. with Streptomyces species. The genome contains .gtoreq.10 prophages or remnants of prophages, indicating that bacteriophage infection has played an important evolutionary role in horizontal gene transfer, in particular in the propagation of bacterial pathogenesis.

REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 3 OF 3 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN

ACCESSION NUMBER: 2001-08527 BIOTECHDS

TITLE: New DNA encoding plant dihydroorotase, for producing herbicide-resistant plants and for screening for compounds that can inhibit dihydroorotase and that can be used as herbicides; tobacco and Arabidopsis thaliana transgenic plant construction

AUTHOR: Ehrhardt T; Lerchl J; Stitt N M; Zrenner R; Schroeder M

PATENT ASSIGNEE: BASF

LOCATION: Ludwigshafen, Germany.

PATENT INFO: WO 2001018190 15 Mar 2001

APPLICATION INFO: WO 2000-EP8581 2 Sep 2000

PRIORITY INFO: DE 1999-1042742 7 Sep 1999

DOCUMENT TYPE: Patent

LANGUAGE: German

OTHER SOURCE: WPI: 2001-235198 [24]

AB A DNA sequence (I) containing the coding region for a plant dihydroorotase (DHO, EC-3.5.2.3) with a DNA sequence (S1) of 1,271 bp is claimed. Also claimed are: a DNA sequence that hybridizes to (S1) and encodes a protein with DHO activity; a protein containing 100 amino acids from a 346 residue protein sequence; identifying substances that inhibit activity of DHO or act as herbicides by inhibition of DHO; and a test system based on expression of (S1) for identifying herbicidal inhibitors of DHO. In an example, a cDNA bank from potato was constructed in plasmid pBS-SK and tested in for complementation of the defect in Escherichia coli CGSC5152 which lacks the DHO gene. The longest clone was sequenced (S1) which included a 1,049 bp open reading frame that encodes DHO. The gene was expressed in vector/host system as a fusion protein or introduced into plant transformation vectors. A sequence of 1,962 bp was isolated from tobacco

(*Nicotiana tabacum*) cDNA bank by using a DNA probes encoding DHO in *Arabidopsis thaliana*. The above can be used to produce DHO and to produce plants with increased resistance to DHO-inactivating herbicides.
(38pp)

=> d his

(FILE 'HOME' ENTERED AT 11:24:00 ON 16 FEB 2005)

FILE 'MEDLINE, HCPLUS, BIOSIS, BIOTECHDS, SCISEARCH, EMBASE' ENTERED AT
11:25:02 ON 16 FEB 2005

L1 273 S INHIBITOR? AND DIHYDROOROTASE
L2 146 DUP REM L1 (127 DUPLICATES REMOVED)
L3 3 S L2 AND (PLANT? OR SOLANUM OR ARBIDOPSIS OR TOBACCO OR WHEAT)

=> s l2 and 1980-1999/py

4 FILES SEARCHED...

L4 78 L2 AND 1980-1999/PY

=> focus l4

PROCESSING COMPLETED FOR L4

L5 78 FOCUS L4 1-

=> d 15 1-10 ibib ab

L5 ANSWER 1 OF 78 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1994:557742 HCPLUS

DOCUMENT NUMBER: 121:157742

TITLE: Synthesis of a phosphinic acid transition state analog
inhibitor of dihydroorotate

AUTHOR(S): Cao, Yu; Christopherson, Richard I.; Elix, John A.;
Gaul, Kim L.

CORPORATE SOURCE: Chem. Dep., Aust. Natl. Univ., Canberra, 0200,
Australia

SOURCE: Australian Journal of Chemistry (1994),
47(5), 903-11

CODEN: AJCHAS; ISSN: 0004-9425

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 121:157742

AB The synthesis of the phosphinic acid 4-hydroxy-6-oxo-1,4-azaphosphinane-2-carboxylic acid 4-oxide (11, shown as I) is described. The phosphinic acid I was designed as a transition state analog inhibitor of dihydroorotate. Thus, treating MeO₂CCH₂P(OEt)₂ with BzOH and then with CF₃CONHC(:CH₂)CO₂Me gave 74% MeO₂CCH₂P(O)(OEt)CH₂CH(CO₂Me)NHCOCF₃, which when treated with concd. HCl gave 77% HO₂CCH₂P(O)(OH)CH₂CH(NH₂)CO₂H. Cyclization of the latter compd. with EDC gave 21% I.

L5 ANSWER 2 OF 78 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1993:113643 HCPLUS

DOCUMENT NUMBER: 118:113643

TITLE: A crystallographic and molecular mechanics study of
inhibitors of dihydroorotate

AUTHOR(S): Hambley, Trevor W.; Phillips, Leonidas; Poiner,
Anthony C.; Christopherson, Richard I.

CORPORATE SOURCE: Dep. Inorg. Chem., Univ. Sydney, 2006, Australia

SOURCE: Acta Crystallographica, Section B: Structural Science
(1993), B49(1), 130-6

CODEN: ASBSDL; ISSN: 0108-7681

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Me L-dihydroorotate is orthorhombic, space group P212121, with a 6.941(2),
b 9.708(2), c 23.329(5) .ANG., Z = 8, dc = 1.455, T = 294 K, final R =
0.036 for 793 reflections. Me L-6-thiodihydrorotate is monoclinic, space

group P21, with a 6.235(2), b 20.821(4), c 6.882(1) .ANG., .beta. 110.82(2).degree., Z = 4, dc = 1.497, 392, T = 294 K, final R = 0.037 for 1404 reflections. Di-Me trans-2-oxohexahdropyrimidine-4,6-dicarboxylate is triclinic, space group P.hivin.1, with a 7.3977(5), b 8.4149(8), c 9.314(1) .ANG., .alpha. 74.65(1), .beta. 68.08(1), .gamma. 98.77(1).degree., Z = 2, dc = 1.428, 294 K, final R = 0.040 for 1468 reflections. Di-Me 2-oxo-1,2,3,6-tetrahydropyrimidine-4,6-dicarboxylate is triclinic, space group P.hivin.1, with a 7.481(3), b 8.344(3), c 9.042(5) .ANG., .alpha. 95.05(3), .beta. 111.02(3), .gamma. 108.31(3).degree., Z = 2, dc = 1.460, T = 294 K, final R = 0.040 for 1253 reflections. The 3-dimensional structures of the Me esters of dihydroorotate and 3 potential **inhibitors** of the enzyme, **dihydroorotase**, were detd. At. coordinates are given. Correlations between the structures of these compds. and their **inhibitory** activities are discussed. It is postulated that for strong binding to **dihydroorotase** to occur, a pyrimidine ring with 3 groups capable of forming strong interactions is required; 2 of these groups must be coplanar with the ring or equatorially disposed, and the 3rd group must be axially disposed. Mol. mechanics modeling was used to study the conformational isomerism of the compds. and the role it plays in detg. binding and consequent inhibition of **dihydroorotase**.

L5 ANSWER 3 OF 78 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1988:406545 HCAPLUS
 DOCUMENT NUMBER: 109:6545
 TITLE: Preparation and testing of 2-oxo-4-carboxypyrimidines as neoplasm **inhibitors** and antimalarials
 INVENTOR(S): Schmalzl, Karl John; Sharma, Suresh Chandra; Christopherson, Richard Ian
 PATENT ASSIGNEE(S): University of Melbourne, Australia; University of Sydney
 SOURCE: Eur. Pat. Appl., 12 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 260057	A2	19880316	EP 1987-307744	19870902 <--
EP 260057	A3	19890201		
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
AU 8777692	A1	19880331	AU 1987-77692	19860902 <--
AU 595062	B2	19900322		
JP 63119471	A2	19880524	JP 1987-220095	19870901 <--
US 4873228	A	19891010	US 1987-91761	19870901 <--
ZA 8706552	A	19880525	ZA 1987-6552	19870902 <--
PRIORITY APPLN. INFO.:			AU 1986-7811	A 19860902
			AU 1986-8161	A 19860922

OTHER SOURCE(S): MARPAT 109:6545

AB The title compds. [I; R1, R2 = OH, peptide residue, alkoxy, alkoxyethyl, amino, any group able to be hydrolyzed in vivo to OH; R3, R4 = H, alkyl, hydroxyalkyl, tetrahydrofuran, tetrahydropyran, (acetylated) sugar residue, any group hydrolyzable in vitro to H; R5 = H, halo, alkyl; R6 = alkyl, 1-methyl-4-nitroimidazol-5-yl; A = H, B = COR2; AB = S] were prep'd. as **inhibitors** of **dihydroorotase**. Di-Me 2-hydroxypyrimidine-4,6-dicarboxylate (prepn. given) was reduced with Zn/HOAc to give 28% di-Me 2-oxo-1,2,3,6-tetrahydropyrimidine-4,6-dicarboxylate, which was refluxed 30 min in 1M NaOH to give 50% 2-oxo-1,2,3,6-tetrahydropyrimidine-4,6-dicarboxylic acid (HDDP). HDDP bound **dihydroorotase** with a Ki of 0.48 .mu.m.

L5 ANSWER 4 OF 78 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1990:419878 HCAPLUS

DOCUMENT NUMBER: 113:19878
TITLE: Pyrimidine biosynthesis in parasitic protozoa:
purification of a monofunctional
dihydroorotate from *Plasmodium berghei* and
Crithidia fasciculata
AUTHOR(S): Krungkrai, Jerapan; Cerami, Anthony; Henderson, Graeme
B.
CORPORATE SOURCE: Lab. Med. Biochem., Rockefeller Univ., New York, NY,
10021, USA
SOURCE: Biochemistry (1990), 29(26), 6270-5
CODEN: BICHAW; ISSN: 0006-2960
DOCUMENT TYPE: Journal
LANGUAGE: English

AB **Dihydroorotate** (DHOase) was purified from 2 parasitic protozoa, *C. fasciculata* (.apprx.16,000-fold) and *P. berghei* (.apprx.790-fold). The *C. fasciculata* enzyme had a native mol. wt. (Mr) of 42,000, detd. by gel filtration chromatog., and showed a single detectable protein band on SDS-PAGE with a Mr of 44,000. The DHOase from *P. berghei* had a native Mr of 40,000 and a subunit Mr on SDS-PAGE of 38,000. The DHOase from both parasites, in contrast to the mammalian enzyme which residues on a trifunctional protein of the 1st 2 enzymes of the pyrimidine biosynthesis pathway, carbamoylphosphate synthase and aspartate transcarbamylase, is a monomeric enzyme and has no oligomeric structure as studied by chem. crosslinking with di-Me suberimidate. The rate of cyclization of N-carbamoyl-L-aspartate (L-CA) by the *C. fasciculata* enzyme was relatively high at acidic pH, decreasing to a very low rate at alk. pH. In contrast, the rate of ring cleavage of L-5,6-dihydroorotate (L-DHO) was very low at acidic pH and increased to higher rate at alk. pH. These pH-activity profiles gave an intersection at pH 6.6. The Km and kcat for L-CA were 0.846 mM and 39.2 min-1, resp.; for L-DHO, they were 25.85 .mu.M and 258.6 min-1. The cryoprotectant DMSO used as stabilizing agent in the complete purifn. and storage, markedly affected the DHOase activity. DMSO increased the catalytic efficiency of the enzyme, as measured by kcat/Km, in the ring cyclization reaction but had no effect on the ring cleavage reaction. In spite of their marked phys. differences, kinetic and inhibitor studies with 5-substituted derivs. of orotic acid suggest that the protozoan, mammalian, and prokaryotic enzymes have a common catalytic mechanism.

L5 ANSWER 5 OF 78 MEDLINE on STN
ACCESSION NUMBER: 89229035 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2565732
TITLE: Mercaptan and dicarboxylate inhibitors of hamster
dihydroorotate.
AUTHOR: Christopherson R I; Schmalzl K J; Szabados E; Goodridge R
J; Harsanyi M C; Sant M E; Algar E M; Anderson J E;
Armstrong A; Sharma S C; +
CORPORATE SOURCE: Department of Biochemistry, University of Sydney, New South
Wales, Australia.
SOURCE: Biochemistry, (1989 Jan 24) 28 (2) 463-70.
Journal code: 0370623. ISSN: 0006-2960.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198906
ENTRY DATE: Entered STN: 19900306
Last Updated on STN: 20000303
Entered Medline: 19890622

AB In mammals, dihydroorotate is part of a trifunctional protein, dihydroorotate synthetase, which catalyzes the first three reactions of de novo pyrimidine biosynthesis. Dihydroorotate catalyzes the formation of a peptide-like bond between the terminal ureido nitrogen and the beta-carboxyl group of N-carbamyl-L-aspartate to yield heterocyclic L-dihydroorotate. A variety of evidence suggests that

dihydroorotase may have a catalytic mechanism similar to that of a zinc protease [Christopherson, R. I., & Jones, M. E. (1980) *J. Biol. Chem.* 255, 3358-3370]. Tight-binding **inhibitors** of the zinc proteases, carboxypeptidase A, thermolysin, and angiotensin-converting enzyme have been synthesized that combine structural features of the substrates with a thiol or carboxyl group in an appropriate position to coordinate a zinc atom bound at the catalytic site. We have synthesized (4R)-2-oxo-6-thioxohexahydropyrimidine-4-carboxylate (L-6-thiodihydroorotate) and have found that this analogue is a potent competitive **inhibitor of dihydroorotase** with a dissociation constant (K_i) in the presence of excess Zn^{2+} ion of $0.17 +/- 0.02$ microM at pH 7.4. The potency of inhibition by L-6-thiodihydroorotate in the presence of divalent metal ions decreases in the order Zn^{2+} greater than Ca^{2+} greater than Co^{2+} greater than Mn^{2+} greater than Ni^{2+} ; L-6-thiodihydroorotate alone is less **inhibitory** and has a K_i of $0.85 +/- 0.14$ microM. 6-Thioorotate has a K_i of $82 +/- 8$ microM which decreases to $3.8 +/- 1.4$ microM in the presence of Zn^{2+} . Zn^{2+} alone is a moderate **inhibitor of dihydroorotase** and does not enhance the potency of other **inhibitors**. (ABSTRACT TRUNCATED AT 250 WORDS)

L5 ANSWER 6 OF 78 MEDLINE on STN
ACCESSION NUMBER: 84114772 MEDLINE
DOCUMENT NUMBER: PubMed ID: 6141293
TITLE: Design and synthesis of tetrahedral intermediate analogues as potential **dihydroorotase inhibitors**.
AUTHOR: Levenson C H; Meyer R B Jr
CONTRACT NUMBER: CA 30157 (NCI)
GM 29291 (NIGMS)
SOURCE: *Journal of medicinal chemistry*, (1984 Feb) 27 (2)
228-32.
Journal code: 9716531. ISSN: 0022-2623.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198403
ENTRY DATE: Entered STN: 19900319
Last Updated on STN: 19970203
Entered Medline: 19840323
AB Three new heterocyclic analogues (4-6) of dihydroorotic acid were designed, synthesized, and tested as **inhibitors** of **dihydroorotase**. Each compound possessed a tetrahedral sulfur atom at the position equivalent to carbon 4 in the dihydroorotate ring in an attempt to mimic the presumed tetrahedral transition state in the course of the enzymatic reaction. Additionally, N-carbamyl-3-phosphonoalanine was prepared and evaluated as a **dihydroorotase inhibitor**. Compounds 4 and 6 were modest **inhibitors** (I_{50} 's of 0.52 and 0.18 mM, respectively), but the other candidate **inhibitors** showed little inhibition at 1 mM.

L5 ANSWER 7 OF 78 MEDLINE on STN
ACCESSION NUMBER: 91070538 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1979249
TITLE: Cytotoxic effects of **dihydroorotase inhibitors** upon human CCRF-CEM leukemia.
AUTHOR: Brooke J; Szabados E; Lyons S D; Goodridge R J; Harsanyi M C; Poiner A; Christopherson R I
CORPORATE SOURCE: Department of Biochemistry, University of Sydney, New South Wales, Australia.
SOURCE: *Cancer research*, (1990 Dec 15) 50 (24) 7793-8.
Journal code: 2984705R. ISSN: 0008-5472.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English

FILE SEGMENT: Priority Journals
ENTRY MONTH: 199101
ENTRY DATE: Entered STN: 19910308
Last Updated on STN: 19950206
Entered Medline: 19910123

AB 6-L-Thiodihydroorotate (TDHO) and 2-oxo-1,2,3,6-tetrahydropyrimidine-4,6-dicarboxylate (HDDP) are potent **inhibitors** of mammalian **dihydroorotase** *in vitro* (R. I. Christopherson, K. J. Schmalzl, E. Szabados, R. J. Goodridge, M. C. Harsanyi, M. E. Sant, E. M. Algar, J. E. Anderson, A. Armstrong, S. C. Sharma, W. A. Bubb, and S. D. Lyons, *Biochemistry*, 28: 463-470, 1989). Using human CCRF-CEM leukemia cells growing in culture, TDHO and HDDP as the free acids have 50% **inhibitory** concentration (IC50) values of 32 microM and greater than 1000 microM, respectively, whereas for TDHO methyl ester, the IC50 value is 25 microM, and for HDDP dimethyl ester, the IC50 value is 21 microM. These IC50 values were not affected by addition of dihydroorotate, uridine, or deoxycytidine to the culture medium. TDHO methyl ester (25 microM) had only slight **inhibitory** effects upon the **dihydroorotase** reaction of de novo pyrimidine biosynthesis in growing leukemia cells, cells arrested in G2 + M phases of the cell cycle. At 250 microM TDHO methyl ester, analysis of cell extracts by high-performance liquid chromatography showed that after 4 h carbamyl aspartate had accumulated from undetectable levels to 760 microM, whereas UTP decreased from 580 to 110 microM and CTP from 350 to 86 microM, indicating inhibition of **dihydroorotase** in growing leukemia cells. IMP accumulated from 63 to 350 microM, total guanylates increased while adenylylates decreased, and the adenylate energy charge decreased from 0.91 to 0.69 after 4 h. The cellular concentration of 5-phosphoribosyl 1-pyrophosphate increased from 180 to 290 microM due to sparing from pyrimidine nucleotide biosynthesis resulting in complementary stimulation of the de novo purine pathway. HDDP dimethyl ester at concentrations of up to 250 microM had no discernable effect upon pyrimidine or purine nucleotide biosynthesis. At 25 microM HDDP-dimethyl ester, cells arrested in G2 + M phases initially, with accumulation of cells in G1/G0 at later times. These data suggest that the primary mechanisms of growth inhibition for TDHO and HDDP involve inhibition of cell cycle progression from late G2 or M phase to G1 phase and that blockade of the pyrimidine pathway by TDHO is a secondary effect found at higher concentrations.

L5 ANSWER 8 OF 78 MEDLINE on STN
ACCESSION NUMBER: 80159948 MEDLINE
DOCUMENT NUMBER: PubMed ID: 6102565
TITLE: The effects of pH and **inhibitors** upon the catalytic activity of the **dihydroorotase** of multienzymatic protein pyrl-3 from mouse Ehrlich ascites carcinoma.
AUTHOR: Christopherson R I; Jones M E
SOURCE: *Journal of biological chemistry*, (1980 Apr 25) 255 (8) 3358-70.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198006
ENTRY DATE: Entered STN: 19900315
Last Updated on STN: 20000303
Entered Medline: 19800625

AB We have studied factors affecting the catalytic activity of **dihydroorotase** (EC 3.5.2.3), purified as part of a multienzymatic protein which contains carbamyl phosphate synthetase, aspartate transcarbamylase, and **dihydroorotase** (ME pyrl-3) and which initiates de novo pyrimidine biosynthesis in mouse Ehrlich ascites carcinoma. The apparent Km value for N-carbamyl-L-aspartate increases by 2 orders of magnitude as the pH increases from 7.0 to 8.3, consistent with

equilibration of **dihydroorotase** (E) between four states of protonation (E in equilibrium EH in equilibrium EH2 equilibrium EH3), where EH3 is the only catalytically active form of **dihydroorotase** for the biosynthetic reaction, having a Km for N-carbamyl-L-aspartate of 30 micro M. The apparent Km for L-dihydroorotate shows a converse dependence upon pH, remaining relatively constant at alkaline pH and increasing progressively as the pH is decreased below 7.0. These data are consistent with the above model if E and EH are catalytically active for the degradative reaction, both having Km values of 4.4 micro M for L-5,6-dihydroorotate. The D isomers of carbamylaspartate and dihydroorotate are also substrates for **dihydroorotase**. At pH 7.33, the apparent Km values for N-carbamyl-L-aspartate and N-carbamyl-D-aspartate are 247 and 204 micro M, respectively, but the Vmax for N-carbamyl-D-aspartate is only 1.7% of that obtained with N-carbamyl-L-aspartate. Orotate and a series of 5-substituted derivatives are competitive **inhibitors** of **dihydroorotase**. At pH 7.27, the apparent Ki for orotate using N-carbamyl-L-aspartate as substrate is 170 micro M and with L-5,6-dihydroorotate as substrate, the apparent Ki value is 9.6 micro M, suggesting that the enzyme exists in different forms in the presence of each substrate. **Dihydroorotase** is inhibited in a time-dependent manner by 50 mM L-cysteine and the presence of N-carbamyl-L-aspartate or L-5,6-dihydroorotate protects against this ultimately complete inactivation. 2-Mercaptoacetate, 2-mercaptopethylamine, 3-mercaptopropionate, and L-2,3-diaminopropionate have a similar although less potent **inhibitory** effect. To account for the data obtained, we propose a model for the equilibria existing between various protonated forms of **dihydroorotase** which is consistent with the pH dependencies of the apparent Km values observed and the Vmax values observed previously (Christopherson, R.I., and Jones, M.E. (1979) J. Biol. Chem. 254, 12506-12512). In addition, a catalytic mechanism is presented for the interconversion of N-carbamyl-L-aspartate and L-5,6-dihydroorotate.

L5 ANSWER 9 OF 78 MEDLINE on STN
ACCESSION NUMBER: 1999024036 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9804694
TITLE: Synthesis and enzymic evaluation of 4-mercaptop-6-oxo-1,4-azaphosphinane-2-carboxylic acid 4-oxide as an **inhibitor** of mammalian **dihydroorotase**.
AUTHOR: Manthey M K; Huang D T; Bubb W A; Christopherson R I
CORPORATE SOURCE: Department of Biochemistry, University of Sydney, Sydney, NSW 2006, Australia.
SOURCE: Journal of medicinal chemistry, (1998 Nov 5) 41 (23) 4550-5.
Journal code: 9716531. ISSN: 0022-2623.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199811
ENTRY DATE: Entered STN: 19990115
Last Updated on STN: 19990115
Entered Medline: 19981130
AB The design, synthesis, and enzymic evaluation of cis- and trans-4-mercaptop-6-oxo-1,4-azaphosphinane-2-carboxylic acid 4-oxide 5 against mammalian **dihydroorotase** is presented. The design strategy for 5 was based on the strong affinity of phosphinothioic acids for zinc and that 5 also resembles the postulated tetrahedral transition state for the enzyme-catalyzed reaction. The synthesis of 5 utilized a novel protection/deprotection sequence upon 4-hydroxy-6-oxo-1,4-azaphosphinane-2-carboxylic acid 4-oxide 4, followed by incorporation of alpha-phenyl benzenemethanethiol and exhaustive deprotection to afford 5 in 40% overall yield from 4. The activities of both isomers of 5 as **inhibitors** of mammalian **dihydroorotase** were marginally greater than that of the parent phosphinic acid 4, indicating a weak

binding enhancement due to the phosphinothioic acid moiety.

L5 ANSWER 10 OF 78 MEDLINE on STN
ACCESSION NUMBER: 91107654 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1671037
TITLE: **Dihydroorotate** from *Escherichia coli*.
Substitution of Co(II) for the active site Zn(II).
AUTHOR: Brown D C; Collins K D
CORPORATE SOURCE: Department of Biological Chemistry, University of Maryland
Medical School, Baltimore 21201.
SOURCE: *Journal of biological chemistry*, (1991 Jan 25)
266 (3) 1597-604.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199102
ENTRY DATE: Entered STN: 19910329
Last Updated on STN: 19970203
Entered Medline: 19910227

AB Treatment of *Escherichia coli* **dihydroorotate** (a homodimer of subunit molecular weight 38,729) containing only the 1 active site Zn(II) ion per subunit with the sulphydryl reagent N-(ethyl)-maleimide (NEM) blocks the two external Zn(II) sites per subunit and dramatically lessens the precipitation caused by high concentrations of Zn(II); stabilizes the enzyme partially against air oxidation and dilution inactivation; makes the active site Zn(II) easier to remove; and lowers Km and increases kcat. Treatment of NEM-blocked **dihydroorotate** ((NEM) **dihydroorotate**) with the chelator 2,6-pyridinedicarboxylic acid at pH 5.0 in the absence of oxygen and trace metal ions removes the active site Zn(II) with a half-life of 15 min, allowing the production of milligram amounts of moderately stable apo-(NEM) **dihydroorotate** in about 80% yield. Treatment of apo-(NEM) **dihydroorotate** with Co(II) at pH 7.0 produces (NEM) **dihydroorotate** completely substituted at the active site with Co(II) in 100% yield: analysis gives 0.95-1.1 g atoms of Co(II) per active site and 0.03-0.05 g atoms of Zn(II) per active site. This Co(II)-(NEM) **dihydroorotate** is hyperactive at pH 8. The electronic absorption spectrum of Co(II)-(NEM) **dihydroorotate** at pH 6.5 implicates an active site thiol group as a ligand to the metal ion. The spectrum is inconsistent with tetrahedral coordination of the active site metal ion and is most consistent with a pentacoordinate structure.

=> d 15 11-20

L5 ANSWER 11 OF 78 MEDLINE on STN
AN 90133790 MEDLINE
DN PubMed ID: 1967653
TI Analogues of carbamyl aspartate as **inhibitors** of **dihydroorotate**: preparation of boronic acid transition-state analogues and a zinc chelator carbamylhomocysteine.
AU Kinder D H; Frank S K; Ames M M
CS Department of Oncology, Mayo Clinic & Foundation, Rochester, Minnesota 55905.
NC CA 15083 (NCI)
SO *Journal of medicinal chemistry*, (1990 Feb) 33 (2) 819-23.
Journal code: 9716531. ISSN: 0022-2623.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199003
ED Entered STN: 19900328

Last Updated on STN: 19970203
Entered Medline: 19900309

L5 ANSWER 12 OF 78 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1999:795993 HCAPLUS
DN 132:31743
TI Gene probes used for genetic profiling in healthcare screening and planning
IN Roberts, Gareth Wyn
PA Genostic Pharma Limited, UK
SO PCT Int. Appl., 149 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9964626	A2	19991216	WO 1999-GB1779	19990604 <--
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	CA 2330929	AA	19991216	CA 1999-2330929	19990604 <--
	AU 9941586	A1	19991230	AU 1999-41586	19990604 <--
	AU 766544	B2	20031016		
	AU 9941587	A1	19991230	AU 1999-41587	19990604 <--
	GB 2339200	A1	20000119	GB 1999-12914	19990604
	GB 2339200	B2	20010912		
	EP 1084273	A1	20010321	EP 1999-925207	19990604
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2003528564	T2	20030930	JP 2000-553616	19990604
	US 2003198970	A1	20031023	US 2002-206568	20020729
PRAI	GB 1998-12098	A	19980606		
	GB 1998-28289	A	19981223		
	GB 1998-16086	A	19980724		
	GB 1998-16921	A	19980805		
	GB 1998-17097	A	19980807		
	GB 1998-17200	A	19980808		
	GB 1998-17632	A	19980814		
	GB 1998-17943	A	19980819		
	US 1999-325123	B1	19990603		
	WO 1999-GB1779	W	19990604		

L5 ANSWER 13 OF 78 MEDLINE on STN
AN 96009619 MEDLINE
DN PubMed ID: 7547862
TI Catalysis by hamster dihydroorotate: zinc binding, site-directed mutagenesis, and interaction with inhibitors.
AU Williams N K; Manthey M K; Hambley T W; O'Donoghue S I; Keegan M; Chapman B E; Christopherson R I
CS Department of Biochemistry, University of Sydney, Australia.
SO Biochemistry, (1995 Sep 12) 34 (36) 11344-52.
Journal code: 0370623. ISSN: 0006-2960.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199510
ED Entered STN: 19951227

Last Updated on STN: 19970203
Entered Medline: 19951025

L5 ANSWER 14 OF 78 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1999:795994 HCAPLUS
DN 132:31744
TI Gene probes used for genetic profiling in healthcare screening and planning
IN Roberts, Gareth Wyn
PA Genostic Pharma Ltd., UK
SO PCT Int. Appl., 745 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9964627	A2	19991216	WO 1999-GB1780	19990604 <--
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

PRAI GB 1998-12099 A 19980606
GB 1998-13291 A 19980620
GB 1998-13611 A 19980624
GB 1998-13835 A 19980627
GB 1998-14110 A 19980701
GB 1998-14580 A 19980707
GB 1998-15438 A 19980716
GB 1998-15574 A 19980718
GB 1998-15576 A 19980718
GB 1998-16085 A 19980724
GB 1998-16086 A 19980724
GB 1998-16921 A 19980805
GB 1998-17097 A 19980807
GB 1998-17200 A 19980808
GB 1998-17632 A 19980814
GB 1998-17943 A 19980819

L5 ANSWER 15 OF 78 MEDLINE on STN
AN 88259140 MEDLINE
DN PubMed ID: 2898532
TI cis-4-Carboxy-6-(mercaptomethyl)-3,4,5,6-tetrahydropyrimidin-2(1 H)-one , a potent inhibitor of mammalian dihydroorotate.
AU Adams J L; Meek T D; Mong S M; Johnson R K; Metcalf B W
CS Department of Medicinal Chemistry, Smith Kline & French Laboratories, Swedeland, Pennsylvania 19479.
SO Journal of medicinal chemistry, (1988 Jul) 31 (7) 1355-9.
Journal code: 9716531. ISSN: 0022-2623.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 198808
ED Entered STN: 19900308
Last Updated on STN: 19970203
Entered Medline: 19880805

L5 ANSWER 16 OF 78 MEDLINE on STN
AN 81069802 MEDLINE

DN PubMed ID: 6108323
TI The overall synthesis of L-5,6-dihydroorotate by multienzymatic protein
pyrl-3 from hamster cells. Kinetic studies, substrate channeling, and the
effects of inhibitors.
AU Christopherson R I; Jones M E
NC HD12787 (NICHD)
P30-CA16086 (NCI)
SO Journal of biological chemistry, (1980 Dec 10) 255 (23)
11381-95.
Journal code: 2985121R. ISSN: 0021-9258.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 198102
ED Entered STN: 19900316
Last Updated on STN: 19980206
Entered Medline: 19810219

L5 ANSWER 17 OF 78 MEDLINE on STN
AN 96106132 MEDLINE
DN PubMed ID: 8572888
TI Purification and characterization of **dihydroorotase** from
Pseudomonas putida.
AU Ogawa J; Shimizu S
CS Department of Agricultural Chemistry, Kyoto University, Japan.
SO Archives of microbiology, (1995 Nov) 164 (5) 353-7.
Journal code: 0410427. ISSN: 0302-8933.
CY GERMANY: Germany, Federal Republic of
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199603
ED Entered STN: 19960315
Last Updated on STN: 19970203
Entered Medline: 19960305

L5 ANSWER 18 OF 78 MEDLINE on STN
AN 92222463 MEDLINE
DN PubMed ID: 1348618
TI Antimalarial activity of orotate analogs that inhibit
dihydroorotase and dihydroorotate dehydrogenase.
AU Krungkrai J; Krungkrai S R; Phakanont K
CS Department of Biochemistry, Faculty of Medicine, Chulalongkorn University,
Bangkok, Thailand.
SO Biochemical pharmacology, (1992 Mar 17) 43 (6) 1295-301.
Journal code: 0101032. ISSN: 0006-2952.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199205
ED Entered STN: 19920529
Last Updated on STN: 19970203
Entered Medline: 19920513

L5 ANSWER 19 OF 78 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation.
on STN
AN 93:284937 SCISEARCH
GA The Genuine Article (R) Number: KZ974
TI EXPRESSION OF CATALYTICALLY ACTIVE HAMSTER **DIHYDROOROTASE** DOMAIN
IN *ESCHERICHIA-COLI* - PURIFICATION AND CHARACTERIZATION
AU WILLIAMS N K; YIN P D; SEYMOUR K K; RALSTON G B; CHRISTOPHERSON R I
(Reprint)
CS UNIV SYDNEY, DEPT BIOCHEM, SYDNEY, NSW 2006, AUSTRALIA

CY A AUSTRALIA
SO PROTEIN ENGINEERING, (APR 1993) Vol. 6, No. 3, pp. 333-340.
ISSN: 0269-2139.
DT Article; Journal
FS LIFE
LA ENGLISH
REC Reference Count: 24
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L5 ANSWER 20 OF 78 MEDLINE on STN
AN 86102131 MEDLINE
DN PubMed ID: 2867744
TI Enzyme elements involved in the interconversion of L-carbamylaspartate and L-dihydroorotate by **dihydroorotase** from *Clostridium oroticum*.
AU Pettigrew D W; Mehta B J; Bidigare R R; Choudhury R R; Scheffler J E;
Sander E G
NC CA29568 (NCI)
GM30911 (NIGMS)
SO Archives of biochemistry and biophysics, (1985 Dec) 243 (2)
447-53.
Journal code: 0372430. ISSN: 0003-9861.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 198601
ED Entered STN: 19900321
Last Updated on STN: 19970203
Entered Medline: 19860130

=> d 15 21-30

L5 ANSWER 21 OF 78 MEDLINE on STN
AN 82110511 MEDLINE
DN PubMed ID: 6119898
TI Chemotherapeutic **inhibitors** of the enzymes of the de novo
pyrimidine pathway.
AU Kensler T W; Cooney D A
SO Advances in pharmacology and chemotherapy, (1981) 18 273-352.
Ref: 197
Journal code: 0237113. ISSN: 0065-3144.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
LA English
FS Priority Journals
EM 198203
ED Entered STN: 19900317
Last Updated on STN: 19980206
Entered Medline: 19820313

L5 ANSWER 22 OF 78 MEDLINE on STN
AN 95284036 MEDLINE
DN PubMed ID: 7766613
TI Function of conserved histidine residues in mammalian
dihydroorotase.
AU Zimmermann B H; Kemling N M; Evans D R
CS Department of Biochemistry, University of Puerto Rico, San Juan
00936-5067.
NC GM47399 (NIGMS)
RR-03051 (NCRR)
SO Biochemistry, (1995 May 30) 34 (21) 7038-46.
Journal code: 0370623. ISSN: 0006-2960.
CY United States

DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199507
ED Entered STN: 19950713
Last Updated on STN: 19970203
Entered Medline: 19950703

L5 ANSWER 23 OF 78 MEDLINE on STN
AN 94227059 MEDLINE
DN PubMed ID: 7909690
TI Cytotoxic effects of **inhibitors** of de novo pyrimidine biosynthesis upon *Plasmodium falciparum*.
AU Seymour K K; Lyons S D; Phillips L; Rieckmann K H; Christopherson R I
CS Department of Biochemistry, University of Sydney, New South Wales, Australia.
SO Biochemistry, (1994 May 3) 33 (17) 5268-74.
Journal code: 0370623. ISSN: 0006-2960.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199406
ED Entered STN: 19940620
Last Updated on STN: 19970203
Entered Medline: 19940608

L5 ANSWER 24 OF 78 MEDLINE on STN
AN 83241362 MEDLINE
DN PubMed ID: 6134826
TI Enzymes of de novo pyrimidine biosynthesis in *Babesia rodhaini*.
AU Holland J W; Gero A M; O'Sullivan W J
SO Journal of protozoology, (1983 Feb) 30 (1) 36-40.
Journal code: 2985197R. ISSN: 0022-3921.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 198308
ED Entered STN: 19900319
Last Updated on STN: 19970203
Entered Medline: 19830826

L5 ANSWER 25 OF 78 MEDLINE on STN
AN 82007717 MEDLINE
DN PubMed ID: 6115855
TI Phosphorylation and dephosphorylation of carbamoyl-phosphate synthetase II complex of rat ascites hepatoma cells.
AU Otsuki T; Mori M; Tatibana M
SO Journal of biochemistry, (1981 May) 89 (5) 1367-74.
Journal code: 0376600. ISSN: 0021-924X.
CY Japan
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 198111
ED Entered STN: 19900316
Last Updated on STN: 19980206
Entered Medline: 19811118

L5 ANSWER 26 OF 78 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
AN 1998:331650 BIOSIS
DN PREV199800331650
TI Looking for **dihydroorotate inhibitors** using phage

display.

AU Robles Lopez, S. M.; Zimmermann, B. H.
CS Univ. Puerto Rico, San Juan, Puerto Rico
SO FASEB Journal, (April 24, 1998) Vol. 12, No. 8, pp. A1444. print.
Meeting Info.: Meeting of the American Society for Biochemistry and
Molecular Biology. Washington, D.C., USA. May 16-20, 1998. American
Society for Biochemistry and Molecular Biology.
CODEN: FAJOEC. ISSN: 0892-6638.

DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)

LA English

ED Entered STN: 12 Aug 1998
Last Updated on STN: 12 Aug 1998

LS ANSWER 27 OF 78 MEDLINE on STN
AN 96227151 MEDLINE
DN PubMed ID: 8654860
TI **Inhibitors** of dihydro-orotate, amidophosphoribosyltransferase
and IMP cyclohydrolase as potential drugs.
AU Christopherson R I; Williams N K; Schoettle S L; Szabados E; Hambley T W;
Manthey M K
CS Department of Biochemistry, University of Sydney, NSW, Australia.
SO Biochemical Society transactions, (1995 Nov) 23 (4) 888-93.
Journal code: 7506897. ISSN: 0300-5127.

CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199607
ED Entered STN: 19960808
Last Updated on STN: 19960808
Entered Medline: 19960730

LS ANSWER 28 OF 78 MEDLINE on STN
AN 96020160 MEDLINE
DN PubMed ID: 8590465
TI As in *Saccharomyces cerevisiae*, aspartate transcarbamoylase is assembled
on a multifunctional protein including a **dihydroorotate**-like
cryptic domain in *Schizosaccharomyces pombe*.
AU Lollier M; Jaquet L; Nedeva T; Lacroute F; Potier S; Souciet J L
CS Laboratoire de Microbiologie et de Genetique, URA n-1481 Universite
Louis-Pasteur/CNRS, Strasbourg, France.
SO Current genetics, (1995 Jul) 28 (2) 138-49.
Journal code: 8004904. ISSN: 0172-8083.

CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
OS GENBANK-M27174; GENBANK-X81841; SWISSPROT-P08955; SWISSPROT-P20054
EM 199603
ED Entered STN: 19960404
Last Updated on STN: 19980206
Entered Medline: 19960328

LS ANSWER 29 OF 78 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1991:672661 HCAPLUS
DN 115:272661
TI Recombinant *Escherichia coli* for the manufacture of pyrimidine
deoxyribonucleosides
IN McDandliss, Russell J.; Anderson, David M.
PA ChemGen Corp., USA
SO PCT Int. Appl., 72 pp.
CODEN: PIXXD2
DT Patent
LA English

FAN.CNT 1					
	PATENT NO.	KIND	DATE	APPLICATION NO.	
				DATE	
PI	WO 9109130	A1	19910627	WO 1990-US6993	19901205 <--
	W: AU, CA, JP, KR				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE				
	US 5213972	A	19930525	US 1989-448158	19891208 <--
	CA 2070826	AA	19910609	CA 1990-2070826	19901205 <--
	CA 2070826	C	20011030		
	AU 9170374	A1	19910718	AU 1991-70374	19901205 <--
	AU 642199	B2	19931014		
	EP 504279	A1	19920923	EP 1991-901364	19901205 <--
	EP 504279	B1	19970709		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
	AT 155170	E	19970715	AT 1991-901364	19901205 <--
	ES 2107451	T3	19971201	ES 1991-901364	19901205 <--
	JP 3032292	B2	20000410	JP 1990-501749	19901205
	JP 05504055	T2	19930701	JP 1991-501749	19911223 <--
	JP 3032292	B2	20000410		
PRAI	US 1989-448158	A	19891208		
	WO 1990-US6993	A	19901205		

L5 ANSWER 30 OF 78 MEDLINE on STN
AN 96227309 MEDLINE
DN PubMed ID: 8654805
TI Identification of the binding site for the allosteric inactivator UTP in mammalian CPS II.
AU Zhu L M; Carrey E A
CS Department of Biochemistry, University of Dundee.
SO Biochemical Society transactions, (1995 Nov) 23 (4) 620S.
Journal code: 7506897. ISSN: 0300-5127.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199607
ED Entered STN: 19960808
Last Updated on STN: 19980206
Entered Medline: 19960730

=> d 15 24 ab

L5 ANSWER 24 OF 78 MEDLINE on STN
AB The pathway of de novo pyrimidine biosynthesis in the rodent parasitic protozoa Babesia rodhaini has been investigated. Specific activities of five of the six enzymes of the pathway were determined: aspartate transcarbamylase (ATCase: E.C. 2.1.3.2); **dihydroorotate** (DHOase: E.C. 3.5.2.3); dihydroorotate dehydrogenase (DHO-DHase: E.C. 1.3.3.1); orotate phosphoribosyltransferase (OPRTase: E.C. 2.4.2.10); and orotidine-5'-phosphate decarboxylase (ODCase: E.C. 4.1.1.23). Michaelis constants for ATCase, DHO-DHase, OPRTase, and ODCase were determined in whole homogenates. Several substrate analogs were also investigated as **inhibitors** and **inhibitor** constants determined. N-(phosphonacetyl)-L-aspartate was shown to be an **inhibitor** of the ATCase with an apparent Ki of 7 microM. Dihydro-5-azaorotate inhibited the DHO-DHase (Ki, 16 microM) and 5-azaorotate (Ki, 21 microM) was an **inhibitor** of the OPRTase. The UMP analog, 6-aza-UMP (Ki, 0.3 microM) was a potent **inhibitor** of ODCase, while lower levels of inhibition were found with the product, UMP (Ki, 120 microM) and the purine nucleotide, XMP (Ki, 95 microM). Additionally, menoctone, a ubiquinone analog, was shown to inhibit DHO-DHase.

=> d 15 31-40

L5 ANSWER 31 OF 78 MEDLINE on STN
AN 92031468 MEDLINE
DN PubMed ID: 1681900
TI Identification of the ATP binding sites of the carbamyl phosphate synthetase domain of the Syrian hamster multifunctional protein CAD by affinity labeling with 5'-[p-(fluorosulfonyl)benzoyl]adenosine.
AU Kim H S; Lee L; Evans D R
CS Department of Biochemistry, Wayne State University School of Medicine, Detroit, Michigan 48201.
NC CA27674 (NCI)
SO Biochemistry, (1991 Oct 22) 30 (42) 10322-9.
Journal code: 0370623. ISSN: 0006-2960.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199111
ED Entered STN: 19920124
Last Updated on STN: 20020420
Entered Medline: 19911125

L5 ANSWER 32 OF 78 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1997:644516 HCAPLUS
DN 127:307358
TI Synthesis and exchange reactions of 5-alkyl-2-oxo-6-thioxo-1,2,3,6-hexahdropyrimidine-4-carboxylic acids
AU Batty, Craig A.; Manthey, Michael K.; Kirk, Julie; Manthey, Monika; Christopherson, Richard I.; Hambley, Trevor
CS Department of Biochemistry, University of Sydney, Sydney, NSW 2006, Australia
SO Journal of Heterocyclic Chemistry (1997), 34(4), 1355-1367
CODEN: JHTCAD; ISSN: 0022-152X
PB HeteroCorporation
DT Journal
LA English
RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 33 OF 78 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1982:194351 HCAPLUS
DN 96:194351
TI Analysis of CAD gene amplification using molecular cloning, gene transfer, and cytogenetics
AU Wahl, Geoffrey M.; Allen, Virginia; Delbrueck, Suzanne; Eckhart, Walter; Meinkoth, Judy; Padgett, Rick; De Saint Vincent, Bruno Robert; Rubnitz, Jeffrey; Stark, George; Vitto, Louise
CS Tumor Virol. Lab., Salk Inst. Biol. Stud., La Jolla, CA, 92037, USA
SO Gene Amplif. [Conf.] (1982), Meeting Date 1981, 167-75.
Editor(s): Schimke, Robert T. Publisher: Cold Spring Harbor Lab., Cold Spring Harbor, N. Y.
CODEN: 47NNA3
DT Conference
LA English

L5 ANSWER 34 OF 78 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
AN 1987:370609 BIOSIS
DN PREV198733061084; BR33:61084
TI PREPARATION OF BORON AND SULFUR CONTAINING ACTIVE SITE DIRECTED INHIBITORS OF DIHYDROOROTASE DHO.
AU KINDER D H [Reprint author]; FRANK S K; AMES M M
CS DEP ONCOL, MAYO CLINIC AND FOUND, ROCHESTER, MINN 55905, USA
SO Proceedings of the American Association for Cancer Research Annual Meeting, (1987) Vol. 28, pp. 329.

Meeting Info.: SEVENTY-EIGHTH ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH, ATLANTA, GEORGIA, USA, MAY 20-23, 1987. PROC AM ASSOC CANCER RES ANNU MEET.

ISSN: 0197-016X.

DT Conference; (Meeting)

FS BR

LA ENGLISH

ED Entered STN: 29 Aug 1987

Last Updated on STN: 29 Aug 1987

LS ANSWER 35 OF 78 MEDLINE on STN

AN 95257934 MEDLINE

DN PubMed ID: 7739536

TI An E-box-mediated increase in cad transcription at the G1/S-phase boundary is suppressed by **inhibitory** c-Myc mutants.

AU Miltenberger R J; Sukow K A; Farnham P J

CS McArdle Laboratory for Cancer Research, University of Wisconsin-Madison Medical School 53706, USA.

NC CA07175 (NCI)

CA09135 (NCI)

CA59524 (NCI)

SO Molecular and cellular biology, (1995 May) 15 (5) 2527-35.

Journal code: 8109087. ISSN: 0270-7306.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199506

ED Entered STN: 19950615

Last Updated on STN: 19980206

Entered Medline: 19950602

LS ANSWER 36 OF 78 MEDLINE on STN

AN 93156739 MEDLINE

DN PubMed ID: 7679200

TI DNA topoisomerase II inhibition and gene amplification in V79/B7 cells.

AU Di Leonardo A; Cavolina P; Maddalena A

CS Dipartimento di Biologia Cellulare e dello Sviluppo, A. Monroy, University of Palermo, Italy.

SO Mutation research, (1993 Mar) 301 (3) 177-82.

Journal code: 0400763. ISSN: 0027-5107.

CY Netherlands

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199303

ED Entered STN: 19930326

Last Updated on STN: 19980206

Entered Medline: 19930309

LS ANSWER 37 OF 78 MEDLINE on STN

AN 86164666 MEDLINE

DN PubMed ID: 2869965

TI Overproduction of the first three enzymes of pyrimidine nucleotide biosynthesis in Drosophila cells resistant to N-phosphonacetyl-L-aspartate.

AU Laval M; Azou Y; Giorgi D; Rosset R

SO Experimental cell research, (1986 Apr) 163 (2) 381-95.

Journal code: 0373226. ISSN: 0014-4827.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 198605

ED Entered STN: 19900321

Last Updated on STN: 19980206
Entered Medline: 19860501

L5 ANSWER 38 OF 78 MEDLINE on STN
AN 83219079 MEDLINE
DN PubMed ID: 6855812
TI Enzymes of the de novo pyrimidine biosynthetic pathway in *Toxoplasma gondii*.
AU Asai T; O'Sullivan W J; Kobayashi M; Gero A M; Yokogawa M; Tatibana M
SO Molecular and biochemical parasitology, (1983 Feb) 7 (2) 89-100.
Journal code: 8006324. ISSN: 0166-6851.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 198307
ED Entered STN: 19900319
Last Updated on STN: 19970203
Entered Medline: 19830715

L5 ANSWER 39 OF 78 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation.
on STN
AN 1999:984275 SCISEARCH
GA The Genuine Article (R) Number: 260QN
TI Looking for **dihydroorotate inhibitors** using phage
display
AU Lopez S M R (Reprint); Zimmermann B H
CS UNIV PUERTO RICO, SAN JUAN, PR 00936
CYA USA
SO FASEB JOURNAL, (24 APR 1998) Vol. 12, No. 8, Supp. [S], pp.
771-771.
Publisher: FEDERATION AMER SOC EXP BIOL, 9650 ROCKVILLE PIKE, BETHESDA, MD
20814-3998.
ISSN: 0892-6638.
DT Conference; Journal
FS LIFE
LA English
REC Reference Count: 0

L5 ANSWER 40 OF 78 SCISEARCH COPYRIGHT (c) 2005 The Thomson Corporation.
on STN
AN 96:589008 SCISEARCH
GA The Genuine Article (R) Number: VA593
TI ASSAY OF ESCHERICHIA-COLI **DIHYDROOROTASE** WITH ENANTIOMERIC
SUBSTRATE - PRACTICAL PREPARATION OF CARBAMYL L-ASPARTATE AND
HIGH-PERFORMANCE LIQUID-CHROMATOGRAPHY ANALYSIS OF CATALYSIS PRODUCT
AU DANIEL R (Reprint); KOKEL B; CAMINADE E; MARTEL A; LEGOFFIC F
CS UNIV PARIS 13, LAB RECH MACROMOL, URA 502 CNRS, AVE JB CLEMENT, F-93430
VILLETANEUSE, FRANCE (Reprint); ECOLE NATL SUPER CHIM, CNRS, LAB BIOORGAN
& BIOTECHNOL, F-75231 PARIS 05, FRANCE
CYA FRANCE
SO ANALYTICAL BIOCHEMISTRY, (01 AUG 1996) Vol. 239, No. 2, pp.
130-135.
ISSN: 0003-2697.
DT Article; Journal
FS LIFE
LA ENGLISH
REC Reference Count: 13
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

=> d 15 32 ab

L5 ANSWER 32 OF 78 HCAPLUS COPYRIGHT 2005 ACS on STN
AB An improved prepn. of 2-oxo-6-thioxo-1,2,3,6-hexahdropyrimidine-4-

carboxylic acid (I), a potent inhibitor of dihydroorotate is presented. Trans-5-alkyl-2-oxo-6-thioxohexahdropyrimidine-4-carboxylic acids II (R = Me, Et, n-Pr) were synthesized via the thiation of the p-methoxybenzyl esters of 5-alkyldihydroorotic acids with Lawesson's reagent followed by subsequent de-protection. The corresponding cis isomers were prep'd. by redn. of 5-alkyl-6-thioxoorotic acids with zinc in acetic acid. The stability and exchange reactions of II under physiol. conditions were investigated by UV and ¹H NMR spectroscopy. The attempted synthesis of diazabicyclonanonanecarboxylic acid III, a fused cyclopentyl deriv. of I is also presented.

=> d his

(FILE 'HOME' ENTERED AT 11:24:00 ON 16 FEB 2005)

FILE 'MEDLINE, HCPLUS, BIOSIS, BIOTECHDS, SCISEARCH, EMBASE' ENTERED AT 11:25:02 ON 16 FEB 2005

L1 273 S INHIBITOR? AND DIHYDROOROTASE
L2 146 DUP REM L1 (127 DUPLICATES REMOVED)
L3 3 S L2 AND (PLANT? OR SOLANUM OR ARBIDOPSIS OR TOBACCO OR WHEAT)
L4 78 S L2 AND 1980-1999/PY
L5 78 FOCUS L4 1-

=> s 14 and plant

L6 1 L4 AND PLANT

=> d 16 ibib ab

L6 ANSWER 1 OF 1 HCPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:748948 HCPLUS

DOCUMENT NUMBER: 128:150233

TITLE: The complete genome sequence of the gram-positive bacterium *Bacillus subtilis*

AUTHOR(S): Kunst, F.; Ogasawara, N.; Moszer, I.; Albertini, A. M.; Alloni, G.; Azevedo, V.; Bertero, M. G.; Bessieres, P.; Bolotin, A.; Borchert, S.; Borriss, R.; Boursier, L.; Brans, A.; Braun, M.; Brignell, S. C.; Bron, S.; Brouillet, S.; Bruschi, C. V.; Caldwell, B.; Capuano, V.; Carter, N. M.; Choi, S.-K.; Codani, J.-J.; Connerton, I. F.; Cummings, N. J.; Daniel, R. A.; Denizot, F.; Devine, K. M.; Dusterhoff, A.; Ehrlich, S. D.; Emmerson, P. T.; Entian, K. D.; Errington, J.; Fabret, C.; Ferrari, E.; Foulger, D.; Fritz, C.; Fujita, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Galleron, N.; Ghim, S.-Y.; Glaser, P.; Goffeau, A.; Golightly, E. J.; Grandi, G.; Guiseppi, G.; Guy, B. J.; Haga, K.; et al.

CORPORATE SOURCE: Unite de Biochemie Microbienne, Inst. Pasteur, Paris, 75724, Fr.

SOURCE: *Nature* (London) (1997), 390(6657), 249-256

CODEN: NATUAS; ISSN: 0028-0836

PUBLISHER: Macmillan Magazines

DOCUMENT TYPE: Journal

LANGUAGE: English

AB *Bacillus subtilis* is the best-characterized member of the gram-pos. bacteria. Its genome of 4,214,810 base pairs comprises 4100 protein-coding genes. Of these protein-coding genes, 53% are represented once, while a quarter of the genome corresponds to several gene families that have been greatly expanded by gene duplication, the largest family contg. 77 putative ATP-binding transport proteins. In addn., a large proportion of the genetic capacity is devoted to the utilization of a variety of carbon sources, including many plant-derived mols. The identification of 5 signal peptidase genes, as well as several genes

for components of the secretion app., is important given the capacity of *Bacillus* strains to secrete large amounts of industrially important enzymes. Many of the genes are involved in the synthesis of secondary metabolites, including antibiotics, that are more typically associated with *Streptomyces* species. The genome contains ≥10 prophages or remnants of prophages, indicating that bacteriophage infection has played an important evolutionary role in horizontal gene transfer, in particular in the propagation of bacterial pathogenesis.

REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> s plant hydroorotase
L7 0 PLANT HYDROOROTASE

=> s plant dihydroorotase
L8 1 PLANT DIHYDROOROTASE

=> d 18 ibib ab

L8 ANSWER 1 OF 1 BIOTECHDS COPYRIGHT 2005 THE THOMSON CORP. on STN
ACCESSION NUMBER: 2001-08527 BIOTECHDS

TITLE: New DNA encoding **plant dihydroorotase**,
for producing herbicide-resistant plants and for screening
for compounds that can inhibit dihydroorotase and that can be
used as herbicides;
tobacco and *Arabidopsis thaliana* transgenic plant
construction

AUTHOR: Ehrhardt T; Lerchl J; Stitt N M; Zrenner R; Schroeder M

PATENT ASSIGNEE: BASF

LOCATION: Ludwigshafen, Germany.

PATENT INFO: WO 2001018190 15 Mar 2001

APPLICATION INFO: WO 2000-EP8581 2 Sep 2000

PRIORITY INFO: DE 1999-1042742 7 Sep 1999

DOCUMENT TYPE: Patent

LANGUAGE: German

OTHER SOURCE: WPI: 2001-235198 [24]

AB A DNA sequence (I) containing the coding region for a **plant dihydroorotase** (DHO, EC-3.5.2.3) with a DNA sequence (S1) of 1,271 bp is claimed. Also claimed are: a DNA sequence that hybridizes to (S1) and encodes a protein with DHO activity; a protein containing 100 amino acids from a 346 residue protein sequence; identifying substances that inhibit activity of DHO or act as herbicides by inhibition of DHO; and a test system based on expression of (S1) for identifying herbicidal inhibitors of DHO. In an example, a cDNA bank from potato was constructed in plasmid pBS-SK and tested in for complementation of the defect in *Escherichia coli* CGSC5152 which lacks the DHO gene. The longest clone was sequenced (S1) which included a 1,049 bp open reading frame that encodes DHO. The gene was expressed in vector/host system as a fusion protein or introduced into plant transformation vectors. A sequence of 1,962 bp was isolated from tobacco (*Nicotiana tabacum*) cDNA bank by using a DNA probes encoding DHO in *Arabidopsis thaliana*. The above can be used to produce DHO and to produce plants with increased resistance to DHO-inactivating herbicides. (38pp)

=> d his

(FILE 'HOME' ENTERED AT 11:24:00 ON 16 FEB 2005)

FILE 'MEDLINE, HCAPLUS, BIOSIS, BIOTECHDS, SCISEARCH, EMBASE' ENTERED AT
11:25:02 ON 16 FEB 2005

L1 273 S INHIBITOR? AND DIHYDROOROTASE
L2 146 DUP REM L1 (127 DUPLICATES REMOVED)
L3 3 S L2 AND (PLANT? OR SOLANUM OR ARABIDOPSIS OR TOBACCO OR WHEAT)

L4 78 S L2 AND 1980-1999/PY
L5 78 FOCUS L4 1-
L6 1 S L4 AND PLANT
L7 0 S PLANT HYDROOROTASE
L8 1 S PLANT DIHYDROOROTASE

=> log y

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	101.80	102.22
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-5.84	-5.84

STN INTERNATIONAL LOGOFF AT 11:45:20 ON 16 FEB 2005

=> d 12 1-3 ibib ab

L2 ANSWER 1 OF 3 MEDLINE on STN
ACCESSION NUMBER: 2003114535 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12626710
TITLE: Dihydropyrimidine amidohydrolases and dihydroorotases share the same origin and several enzymatic properties.
AUTHOR: Gojkovic Zoran; Rislund Lise; Andersen Birgit; Sandrini Michael P B; Cook Paul F; Schnackerz Klaus D; Piskur Jure
CORPORATE SOURCE: Eukaryote Molecular Biology, BioCentrum-DTU, Technical University of Denmark, Building 301, DK-2800 Lyngby, Denmark.
SOURCE: Nucleic acids research, (2003 Mar 15) 31 (6) 1683-92.
JOURNAL CODE: 0411011. ISSN: 1362-4962.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200303
ENTRY DATE: Entered STN: 20030312
Last Updated on STN: 20030331
Entered Medline: 20030328

AB Slime mold, plant and insect dihydropyrimidine amidohydrolases (DHPases, EC 3.5.2.2), which catalyze the second step of pyrimidine and several anti-cancer drug degradations, were cloned and shown to functionally replace a defective DHPase enzyme in the yeast *Saccharomyces kluyveri*. The yeast and slime mold DHPases were over-expressed, shown to contain two zinc ions, characterized for their properties and compared to those of the calf liver enzyme. In general, the kinetic parameters varied widely among the enzymes, the mammalian DHPase having the highest catalytic efficiency. The ring opening was catalyzed most efficiently at pH 8.0 and competitively inhibited by the reaction product, N-carbamyl-beta-alanine. At lower pH values DHPases catalyzed the reverse reaction, the closing of the ring. Apparently, eukaryote DHPases are enzymatically as well as phylogenetically related to the de novo biosynthetic dihydroorotase (DHOase) enzymes. Modeling studies showed that the position of the catalytically critical amino acid residues of bacterial DHOases and eukaryote DHPases overlap. Therefore, only a few modifications might have been necessary during evolution to convert the unspecialized enzyme into anabolic and catabolic ones.

L2 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:504932 HCAPLUS
DOCUMENT NUMBER: 137:74413
TITLE: Transgenic plants expressing sugar beet genes involved in stress tolerance and their uses for salt stress resistance
INVENTOR(S): Kanhonou, Rodolphe Arthur; Serrano Salom, Ramon; Ros Palau, Roque
PATENT ASSIGNEE(S): Cropdesign N.V., Belg.
SOURCE: PCT Int. Appl., 95 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002052012	A2	20020704	WO 2001-EP15093	20011220
WO 2002052012	C1	20030220		
WO 2002052012	A3	20020912		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,

LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
 PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
 US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 CA 2432380 AA 20020704 CA 2001-2432380 20011220
 EP 1343875 A2 20030917 EP 2001-986428 20011220
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 JP 2004524015 T2 20040812 JP 2002-553492 20011220
 US 2004111769 A1 20040610 US 2004-451554 20040126
 PRIORITY APPLN. INFO.: EP 2000-870319 A 20001222
 US 2001-271656P P 20010226
 WO 2001-EP15093 W 20011220

AB The present invention relates to isolated genes originating from Beta vulgaris, sugar beet, that are involved in responses to stress situations. The genes were isolated from a sugar beet cDNA library screened in a functional selection procedure with transformed yeast cells that were able to grow in selection medium with high salt concns. Subsequently these genes were sequenced and further characterized. One of the genes is a sugar beet casein kinase .alpha.-subunit (BvCK2A), one is a sugar beet dihydroorotate (BvDHO), one is a sugar beet translation initiation factor 1A (Bvelf-1A) and two others are of a unknown protein type (Bv120 and Bv20Li). The expression level of BvCK2A gene was enhanced under salt stress condition and the transgenic rice and *Arabidopsis* expressing BvCK2A exhibited resistance to salt. All of these isolated plant genes were functional as stress tolerance enhancers in yeast cells and are therefore useful to confer stress tolerance to an organism when transfected herein. More particularly, these genes can be used to render crops resistant to stress situations like osmotic stress caused by salt, drought, cold or frost.

L2 ANSWER 3 OF 3 HCPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2001:152854 HCPLUS
 DOCUMENT NUMBER: 134:205156
 TITLE: Transgenic plants with increased polysaccharide content overexpressing dihydroorotate
 INVENTOR(S): Ehrhardt, Thomas; Stitt Nigel, Marc; Geigenberger, Peter Ludwig; Loef, Irene; Zrenner, Rita; Schroeder, Michael
 PATENT ASSIGNEE(S): BASF A.-G., Germany
 SOURCE: PCT Int. Appl., 32 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001014569	A2	20010301	WO 2000-EP7884	20000812
WO 2001014569	A3	20011011		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRIORITY APPLN. INFO.: DE 1999-19939688 A 19990820
AB The invention relates to a method of producing plants with an increased polysaccharide content that are obtained by overexpressing a gene of the

pyrimidine metab. such as **dihydroorotate**. Thus, potato, tobacco, and **Arabidopsis thaliana** expressing, from the 35S promoter, a chimeric gene encoding tobacco transketolase transit peptide fused to potato **dihydroorotate** were prep'd. These transgenic plants exhibited increased levels of uridine nucleotides and starch.

=> log y

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	11.88	12.09
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-1.46	-1.46

STN INTERNATIONAL LOGOFF AT 11:50:18 ON 16 FEB 2005